

THE STATUS OF THE CARIDEAN SHRIMP
PANDALINA MODESTA (BATE, 1888)
(CRUSTACEA: DECAPODA: PANDALIDAE) WITH
REDESCRIPTION OF THE SPECIES

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Abstract.—The identity of *Pandalus modestus* Bate, 1888 from South Africa is studied. The species belongs to the genus *Pandalina* Calman, 1899. Comparison with the other species of the genus revealed that Bate's species is closely related to *Pandalina profunda* Holthuis, 1946 from European and west African waters. However, both species are easily distinguished by the length of the pereopods, clearly longer in *P. modesta*.

Bate (1888) described a new species of pandalid shrimps under the name *Pandalus modestus* from South Africa (Agulhas Bank, 274 m [= 150 fms] depth). The species was later cited in the same area, under the same name, by Stebbing (1914) and by Barnard (1950), who questionably synonymized the species with *Pandalina brevis* (Rathke, 1843), a common species in the European coasts. The same author suggested that the species should be synonymous with *Pandalina profunda* Holthuis, 1946, from European and west African waters.

The differences between *Pandalina brevis* and *Pandalina profunda* were definitely established by Greve (1967). This author indicated that there is really only one reliable difference separating the two species: the spinose extent on the ambulatory dactyls. However, the identity of the specimens from southern Africa remained unresolved (Crosnier & Forest 1973).

Unfortunately, Bate's type is in a poor condition; the rostrum is broken and the pereopods are lost (Crosnier & Forest 1973). Therefore, in this study specimens collected around the type locality (Cape area) have been used for a comparison with the two species of *Pandalina*.

This comparison revealed that the specimens from southern Africa actually rep-

resent a different species of the genus *Pandalina* Calman, 1899; therefore, Bate's species should be validated. Because of the problems of identity and distribution that have existed with *Pandalus modestus*, the species is here redescribed.

Specimens used for this study came from the collections of the South African Museum, Cape Town (SAM), Muséum national d'Histoire naturelle, Paris (MNHN) and Instituto de Ciencias del Mar, Barcelona (ICM). The abbreviation CL indicates carapace length excluding rostrum.

Pandalina modesta (Bate, 1888)

Figs. 1, 2

Pandalus modestus Bate, 1888:670, pl. 114, fig. 4.—Stebbing, 1910:392.—Stebbing, 1914:36.

Pandalina brevis.—Barnard, 1947:384.—Barnard, 1950:676, fig. 126a-c.—Kensley, 1981:28 (not *Pandalina brevis* Rathke, 1843).

Pandalina profunda.—Macpherson, 1983:64 (not *Pandalina profunda* Holthuis, 1946).

Material examined.—Off Cape area and East London: 12 ♀ (CL = 5.0–6.8 mm), 2 ovig. ♀ (CL = 5.4–5.5 mm), 4 ♂ (CL = 5.7–6.5 mm), R/V Pieter Faure, 268–360 m

(several samples together), SAM A8396–8398.—1 ♀ (CL = 4.5 mm), SAM A13280.—1 ♀ (CL = 6.1 mm), SAM A13642.—1 ♀ (CL = 5.7 mm), SAM A1280.—South of Namibia: 1 ♀ (CL = 7.1 mm), 26°42'S, 14°06'E, 395 m, ICM D1047.

Description.—Rostrum horizontal, not nearly reaching level of end of penultimate antennular segment, around 0.5 times length of carapace; dorsal margin armed with 8 to 10 teeth, 5 proximals being movable; lower margin bearing 2 to 4 teeth. Antennal spine stronger than pterygostomian spine.

Abdomen with 3rd somite rounded posteriorly, unarmed, slightly overhanging 4th segment. Pleura of 3 anterior somites broadly rounded, of 4th and 5th bearing sharp tooth. Sixth somite slightly less than 2 times as long as 5th somite (length measured on dorsal margin) and less than 2.5 times maximum height. Telson as long as 6th somite, with 7 or 8 pairs of dorso-lateral spines and 2 longer pairs on apex.

Eyes broadly subpyriform, maximum diameter about 0.2 times carapace length; ocellus present, slightly constricted at juncture with cornea.

Antennular peduncle with small tooth on inner margin of basal segment. Ultimate and penultimate segment of similar length.

Antennal scale with lateral margin nearly straight, about 0.7 to 0.8 times as long as carapace, 5.0 times as long as wide, distolateral tooth not overreaching blade.

Mouth parts as illustrated. Third maxilliped with epipod; endopod slightly overreaching antennal scale, armed terminally with long, slender apical and few subapical spines; penultimate segment about 0.5 times as long as terminal segment. Exopod absent.

Pereopods with well-developed epipods on 4 anterior pairs. First pereopod slender, overreaching antennular peduncle by length of propodus. Second left pereopod longer than right. Right overreaching antennular peduncle by somewhat less than length of chela; merus occurring at level of anterior border of basicerite; carpus with 4 to 6 segments and about 1.8 times long as chela.

Left overreaching antennular peduncle by somewhat less than half carpus length; carpus composed of 16 to 21 articles and somewhat less than 5 times chela length. Third pereopod with carpus clearly overreaching antennular peduncle; ischium with 1 or 2 posterior spines; merus occurring pterygostomian angle by 0.4 of merus; merus about 2 times as long as carpus, armed with 11 to 14 posterior and outer spines; carpus bearing 6 to 9 posterior and outer spines; propodus almost two times length of carpus and 3.0 to 3.8 times length of dactylus, having 10 to 18 posterior spines; dactylus armed with 3 or 4 spines on proximal half of posterior margin. Fourth pereopod with carpus clearly overreaching penultimate segment of antennular peduncle. Ischium with 2 or 3 posterior spines; merus about 2 times length of carpus, armed with 14 to 18 posterior and outer spines; merus occurring pterygostomian angle by 0.2 of merus length; carpus having 5 to 7 posterior and outer spines; propodus 1.7 to 2.0 times length of carpus and about 4.5 times length of dactylus, bearing 12 to 14 posterior spines; dactylus armed with 3 or 4 spines on the proximal half of posterior margin. Fifth pereopod with merus clearly not reaching pterygostomian angle; ischium with 1 or 2 small posterior spines; merus about 1.7 times length of carpus, having 10 to 13 posterior and outer spines; carpus armed with 4 outer spines; propodus almost two times carpus length and 4.3 to 5.0 times as long as dactylus and bearing 9 or 10 posterior spines; dactylus with 3 spines on proximal 2/3 of posterior margin.

Uropods overreaching end of telson; exopodite longer than endopodite and bearing movable spine.

Remarks.—*Pandalina brevirostris* is closely related to *P. profunda* but it is readily differentiated by the length of the dactylus of 3rd–5th pereopod and the part of the dactylus bearing posterior spines. In *P. profunda* the dactylus is long and slender with the posterior margin carrying spines only in the proximal half. In *P. brevirostris* the dac-

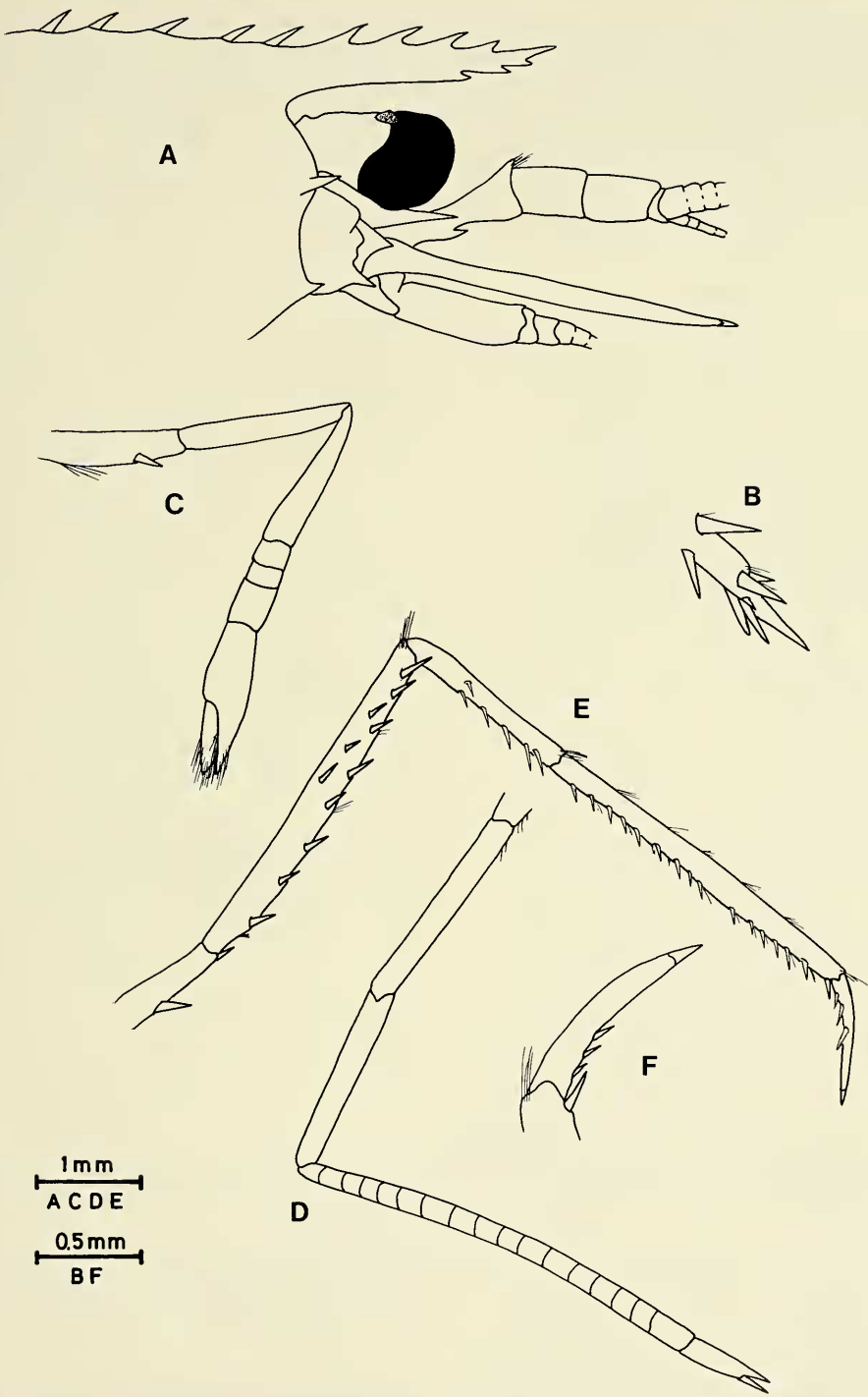


Fig. 1. *Pandalina modesta* (Bate, 1888), ♀, CL = 4.5 mm, SAM A13280. A, Anterior carapace and anterior appendages; B, Right third maxilliped, distal end; C, Second right pereopod; D, Second left pereopod; E, Third right pereopod; F, Same, dactylus.

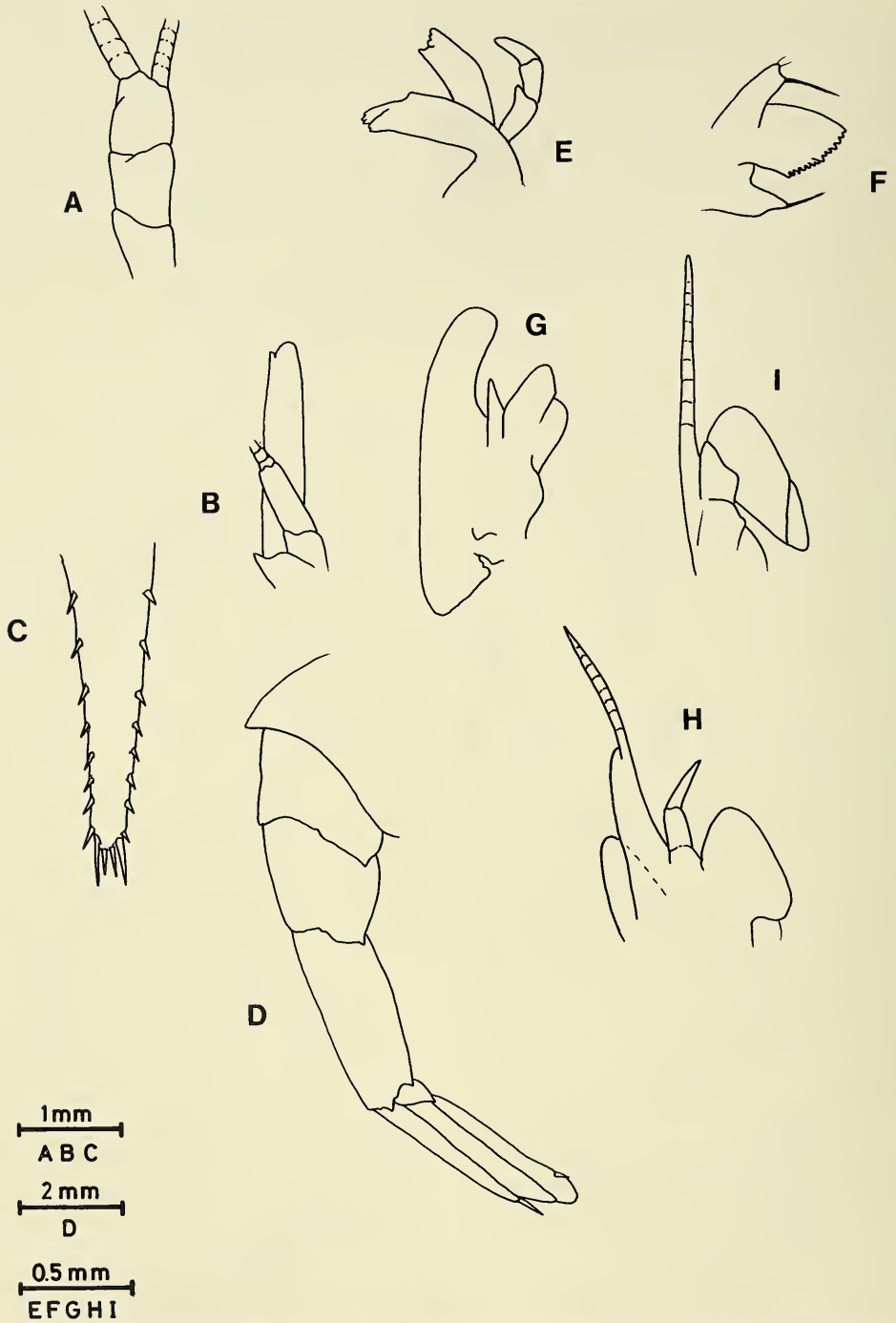


Fig. 2. *Pandalina modesta* (Bate, 1888). A-D, ♀, CL = 4.5 mm, SAM A13280. A, Right antennula; B, Right antenna, ventral view; C, Telson; D, Abdomen. E-I, ♀, 5.7 mm (SAM A8396-8398). E, Right mandible; F, Right first maxilla; G, Right second maxilla; H, Right first maxilliped; I, Right second maxilliped.

tylus is much shorter and the spines of the posterior margin always are regularly dispersed over the entire length (Holthuis 1946, Greve 1967, Zariquiey-Alvarez 1968).

Pandalina modesta has a long and slender dactylus, with spines only in the proximal half; thereby it resembles *P. profunda* (material examined of *P. profunda*: 1 ♀ [CL = 5.7 mm], Travailleur, st. 58, 440 m [MNHN Na1213].—2 ♀ [CL = 3.1–4.3 mm], 47°34.8'N, 07°18.1'W, 825 m [MNHN Na10319].—1 ♀ [CL = 3.2 mm], 48°40.8'S, 09°47.7'W, 373 m [MNHN Na10321].—4 ♀ [CL = 2.8–3.8 mm], 48°41.6'S, 09°52.9'W, 350 m [MNHN Na10322].—1 ♂ [CL = 3.8 mm], 7 ♀ [CL = 3.6–4.4 mm], 47°36'S, 07°16.8'W, 330 m [MNHN Na10320]). The comparative analysis of these specimens shows that they are easily distinguished by the length of the pereopods, clearly longer in *P. modesta* than in *P. profunda*.

The merus of the 2nd left pereopod of *P. modesta* almost reaches the end of the basal segment of the antennular peduncle, while in *P. profunda* it slightly overreaches the basicerite.

In *P. modesta* the 3rd pereopod has the merus reaching or overreaching the terminal border of the cornea. In *P. profunda* it reaches only to the level of the proximal border of the cornea.

The merus of the 4th pereopod in *P. modesta* reaches or overreaches the distal margin of the basicerite, while in *P. profunda* it only slightly overreaches the pterygostomian border.

Also, the carpus of the left second pereopods has generally more articles in *P. modesta* (16 to 21) than in *P. profunda* (14 to 16).

Distribution.—Southern Africa, from East London to Saldanha Bay and south of Namibia. Depth range: 265 to 360 m.

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